

CALIFORNIA SUMMER ELECTRICITY OUTLOOK: 2002 - 2004

STAFF REPORT

Documentation of Baseline Assumptions and Principal Uncertainites

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Gray Davis, Governor

CALIFORNIA ENERGY COMMISSION

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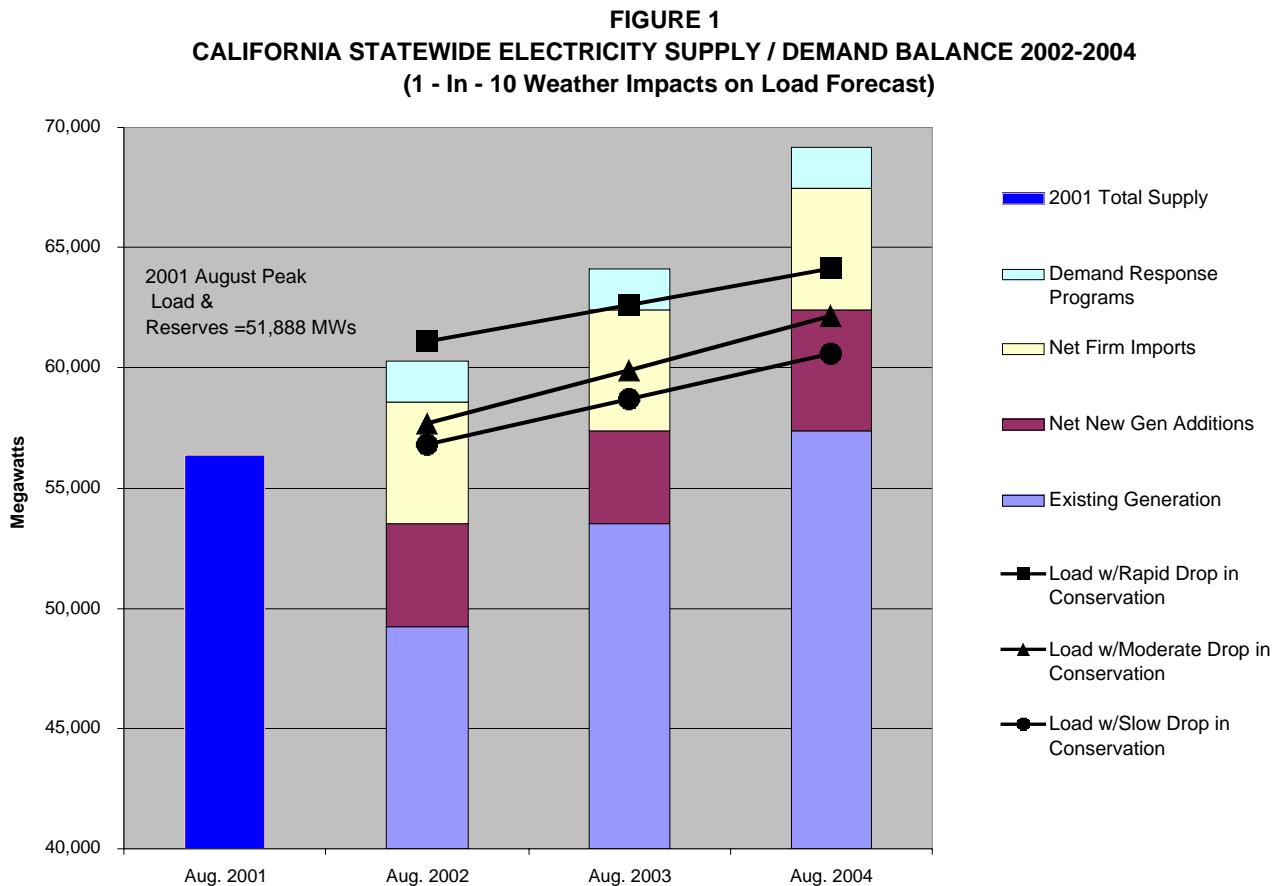
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SUMMARY

This forecast has been developed by the Energy Commission staff to show expected statewide electric resource adequacy for the summers of 2002 through 2004. A supply demand balance chart summarizes expected loads and expected resources to meet those loads for each of forecast years. Each of the components is documented below.

Figure 1 summarizes the results. This figure shows staff's "Most Likely" forecast of generation additions with staff's peak demand & conservation forecast considering various conservation impacts for each summer peak period.



Staff has also performed a sensitivity analysis using various temperature impacts in addition to the conservation impacts. The resulting charts, along with a duplicate **Figure 1**, are included in full-size in Appendix A. **Table 1** displays the data shown in **Figure 1**.

Table 1 - Data for Figure 1

	Megawatts			
	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>
2001 Total Supply	56,381			
Existing Generation		49,221	53,488	57,372
Net New Gen Additions		4,267	3,884	5,038
Net Firm Imports		5,068	5,068	5,068
Demand Response Programs		1,699	1,699	1,699
Total	56,381	60,255	64,139	69,177

Notes: Based Upon Energy Commission's Staff's Most Likely Estimate for Generation.

DOCUMENTATION

The Summer Peak Supply and Demand Chart was developed by the California Energy Commission Staff. The analytical approach taken is similar to that of the “2002 Monthly Electricity Forecast”. This document looks at August (considered the summer peak) for the three years, while the other document looks solely at 2002 on a monthly basis.

In cases where the assumptions or data are the same, this document will refer to that more detailed forecast.

The three main categories of data for this forecast are: demand assumptions, net new generation additions with assigned probabilities, and demand responsiveness programs. Other categories such as “Existing Generation” and “Net Firm Imports” are the same as the 2002 Monthly Electricity Forecast.

DEMAND

Energy Commission staff estimated the projected demand for August of each year (2002-2004) while considering two main impacts – temperature and conservation. Each impact has been evaluated at three possible levels for scenario analysis. The following explains these levels of impact.

Temperature

The California Energy Commission (Energy Commission) forecasts an annual statewide peak demand corresponding to temperature conditions that have a 1-in-2, 1-in-5, 1-in-10 and 1-in-40 probability of occurring. For purposes of this forecast, only the 1-in-2 and 1-in-10 probabilities are used. Note that a 1-in-2 forecast has a 50% probability of occurrence and is considered by the Energy Commission as “normal” weather. Similarly, a 1-in-10 forecast would have only a 10% probability of occurrence and is considered to be “hotter than normal”.

Conservation

In 2001, California experienced a significant voluntary reduction in consumption in an effort to stave off power shortages and to respond to increases in rates. It is uncertain as to whether such voluntary response will continue in the 2002-2004 timeframe. Accordingly, this forecast creates three scenarios – “low, most likely, and high” for 2002-2004. These scenarios are also used in the Energy Commission *California Energy Demand 2002-2012 Forecast*.

The “most likely” demand scenario assumes a rather rapid decrease in voluntary reductions (i.e., less overall megawatt savings) than experienced in 2001. The “low” demand scenario assumes that the decrease in voluntary reductions occurs more slowly (thus there would be higher voluntary reductions than the most likely scenario and therefore the net demand would be lower than the most likely scenario). Finally,

the “high” demand scenario assumes a complete elimination of voluntary reductions (therefore leading to a higher net demand).

Table 2 shows the projected demand scenarios for this forecast. Note that the megawatts shown include the 7% reserves.

Table 2 - Projected Demand Scenarios
(Includes Reserves)

	August Peak Demand			% Growth 2002-2004
	2002	2003	2004	
Normal Weather (1-in-2)				
Low	53,681	55,446	57,260	7%
Most Likely	54,512	56,581	58,716	8%
High	57,698	59,137	60,606	5%
Hotter-Than-Normal (1-in-10)				
Low	56,810	58,677	60,600	7%
Most Likely	57,691	59,880	62,142	8%
High	61,065	62,587	64,145	5%
% Higher than Normal				
Low	6%	6%	6%	
Most Likely	6%	6%	6%	
High	6%	6%	6%	

Source: Energy Commission "California Energy Demand 2002-2012 Forecast"

EXISTING RESOURCES

2002

Existing resources for 2002 (49,221 megawatts) are based on installed generation as of October 31, 2001.

2003-2004

The Existing Resources for these years reflect the net new generation additions of the previous year. For example, 2003 Existing resources = 2002 Existing Resources + 2002 Net New Additions.

As described later, the new additions for 2002 are those resources that come on-line between November 1, 2001 and August 1, 2002. The new additions for 2003 are those resources that come on-line between August 2, 2002 and August 1, 2003.

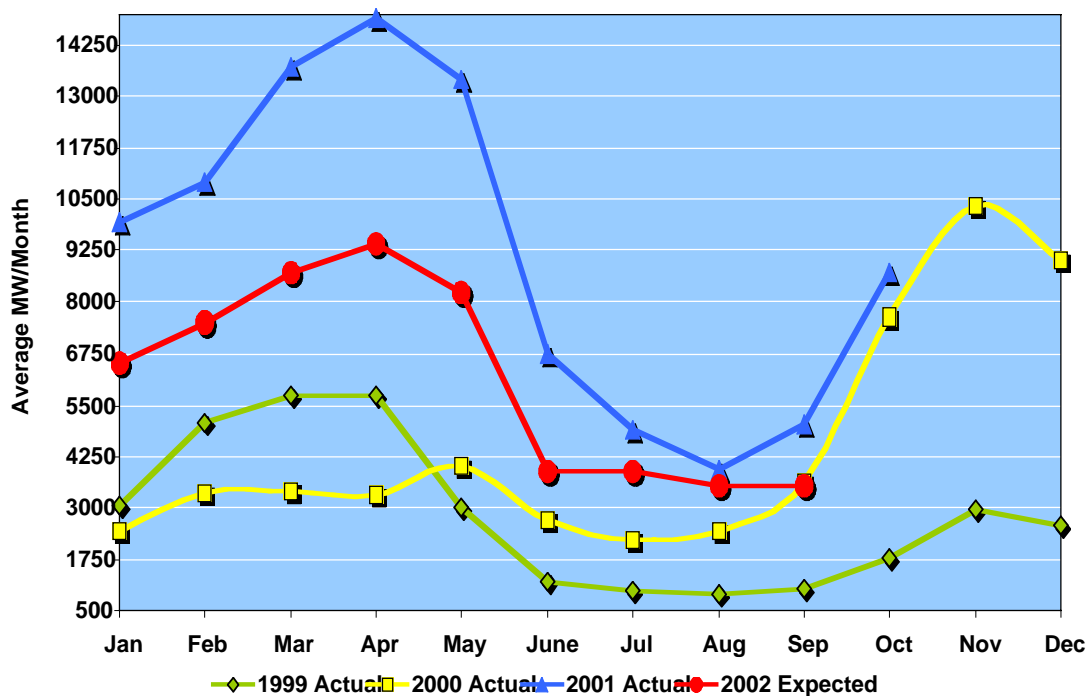
Dependable Capacity

It should be noted that the data used for generation is adjusted for seasonal variations such as hydroelectric availability. Therefore, the amount of generation shown in this forecast is typical for the month of August and may be higher or lower during other months in a given year. For more information, please refer to the "2002 Monthly Electricity Forecast".

Outages

The current outlook for outages during the 2002-2004 period assumes an average of 3,550 MW during August of each year. While the actual amount of outages varies significantly each month (or each day) due to planned maintenance and unplanned outages, staff expects that during the month of August, the ISO and plant owners will strive to minimize such outages. **Figure 2** shows that 3,550 MW for August is typical of previous summers.

Figure 2 - Historical and 2002 Expected Statewide Monthly Average Outages



NET FIRM IMPORTS

California uses its interconnections with other Western states to import power on an on-going basis. While California does take advantage of spot market power (such as spring runoff in the Northwest), it also has long-term contracts to import power from resources owned by California but located outside of the state as well as from other entities. It is this longer-term use that this forecast has included to help meet

the load. Therefore, significant swings in runoff or other spot market variations of availability are not included herein. This forecast estimates a net firm import of 5,068 megawatts. For a more in-depth review of that number, please refer to the "2002 Monthly Electricity Forecast".

NEW GENERATION ADDITIONS

For purposes of this forecast, Staff has identified three scenarios of generation additions based upon the probability of coming on-line by August 1st of each year – Conservative (85% probability), Most Likely (75%), and Aggressive (50%). For a given resource, if Staff has estimated that there's an 85% probability making August 1st, then it also is included in the 75% and 50% categories. Similarly, a resource at 75% will also be included within the 50% category.

Time frames for Annual Net Additions

- 2002 Net Generation Additions are those resources that are expected to come on-line between November 1, 2001 and August 1, 2002.
- 2003 Net Generation Additions are those resources that are expected to come on-line between August 2, 2002 and August 1, 2003.
- 2004 Net Generation Additions are those resources that are expected to come on-line between August 2, 2003 and August 1, 2004.

Resources are aggregated each year based upon their progress towards completion. For purposes of this 3 year forecast, Staff includes only those resources that are under construction, obtaining financing, or undergoing Energy Commission Siting Review.

Staff has also estimated new renewables projects (which are in addition to the non-renewables mentioned above). Staff has the following estimates:

2002: 165 MW of new renewables.
2003: 55 MW of new renewables
2004: 0 MW of new renewables.

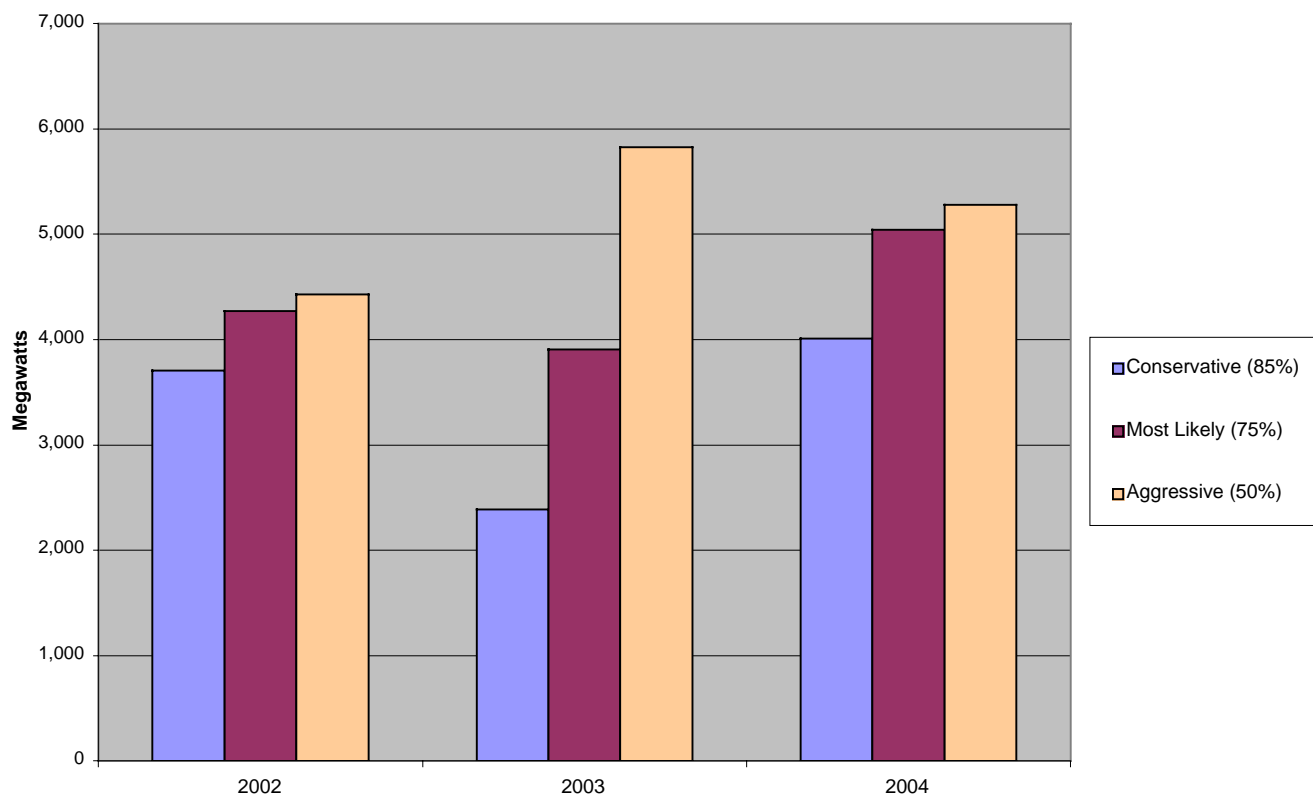
No probability distinctions have been assumed for renewables.

The Net New Generation Additions are summarized in **Table 3** and graphically in **Figure 3**.

Table 3 - Expected Net New Generation Additions

Year	Status	Conservative 85%	Most Likely 75%	Aggressive 50%
2002	Construction	3,543	4,102	4,102
	Financing	0	0	0
	CEC Review	0	0	160
	Renewables	165	165	165
	Sub Total	<u>3,708</u>	<u>4,267</u>	<u>4,427</u>
2003	Construction	1,743	3,264	4,430
	Financing	77	77	652
	CEC Review	511	511	689
	Renewables	55	55	55
	Sub Total	<u>2,386</u>	<u>3,907</u>	<u>5,826</u>
2004	Construction	2,687	1,166	0
	Financing	1,070	1,070	990
	CEC Review	249	2,802	4,288
	Renewables	0	0	0
	Sub Total	<u>4,006</u>	<u>5,038</u>	<u>5,278</u>
2002-2004	Total MW	10,100	13,212	15,531

**Figure 3
Range of Probable Generation Additions**



DEMAND-RESPONSE PROGRAMS

ISO demand-side programs, CPUC interruptible tariff programs, similar programs and time-of-use meters account for 1,699 MW of estimated summer peak savings. These programs target many of the same customers. There may be some double counting, or overlap in the estimated savings from these programs and tariffs. This number is the same for all 3 years. For further information, please refer to the "2002 Monthly Electricity Forecast".

APPENDIX A

FULL SIZE SUPPLY/DEMAND BALANCE CHARTS

FIGURE 1
CALIFORNIA STATEWIDE ELECTRICITY SUPPLY / DEMAND BALANCE 2002-2004
(1 - In - 10 Weather Impacts on Load Forecast)

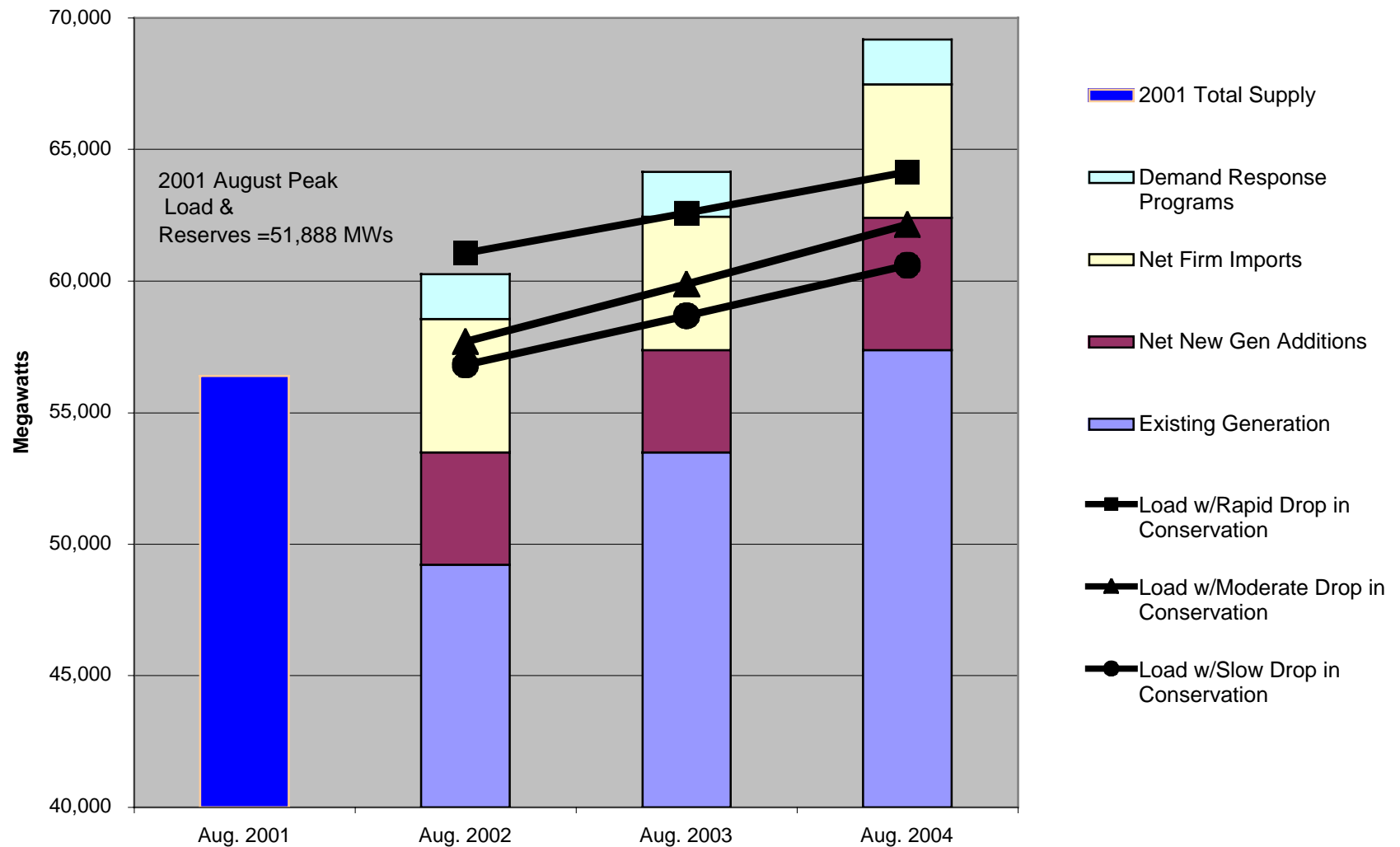


FIGURE 4
CALIFORNIA STATEWIDE SUPPLY / DEMAND BALANCE 2002-2004
SUMMER CAPACITY - "Most Likely Conservation Impact Upon Demand"

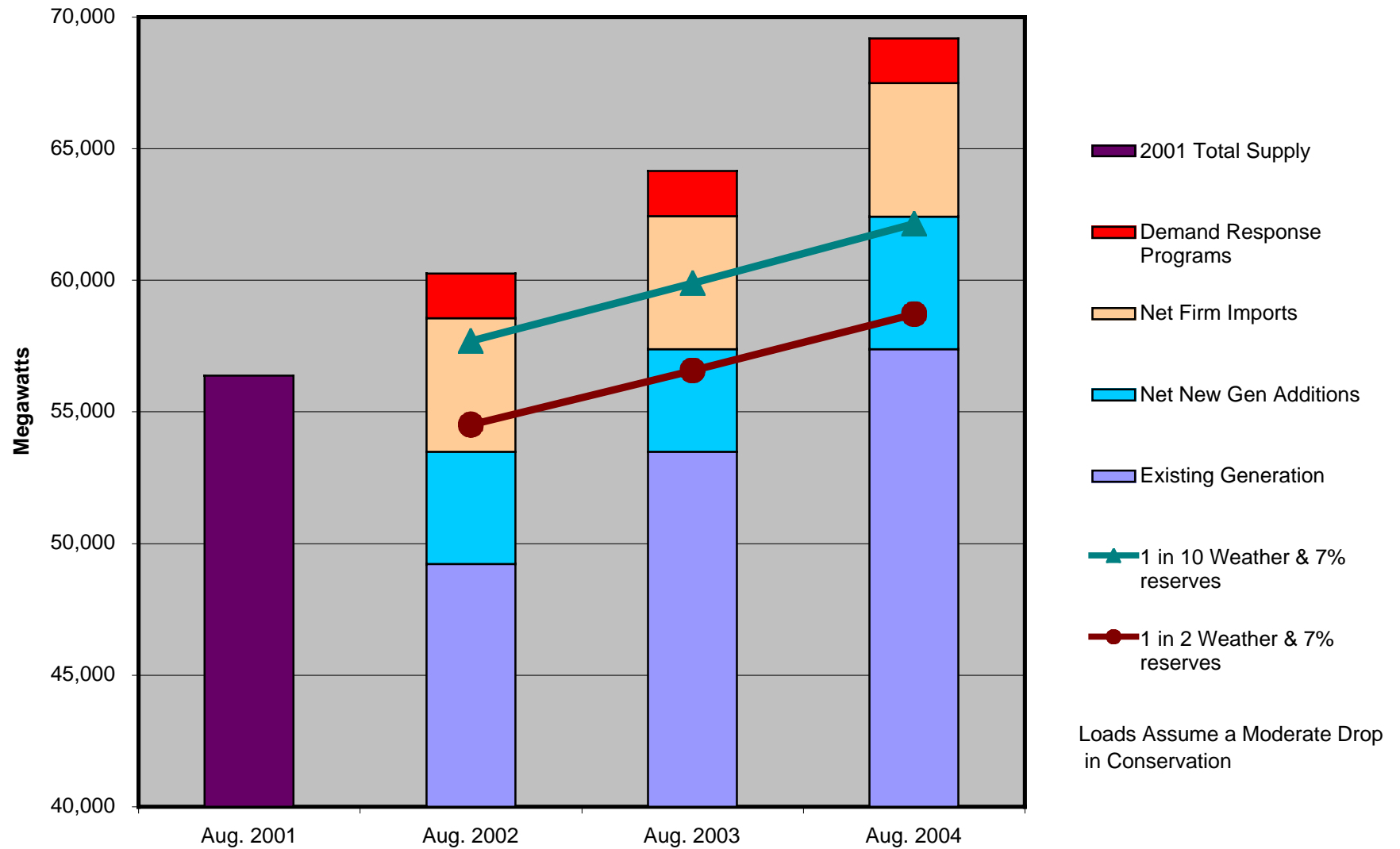


FIGURE 5
CALIFORNIA STATEWIDE SUPPLY DEMAND BALANCE 2002-2004
SUMMER CAPACITY - "Low Demand" Scenario

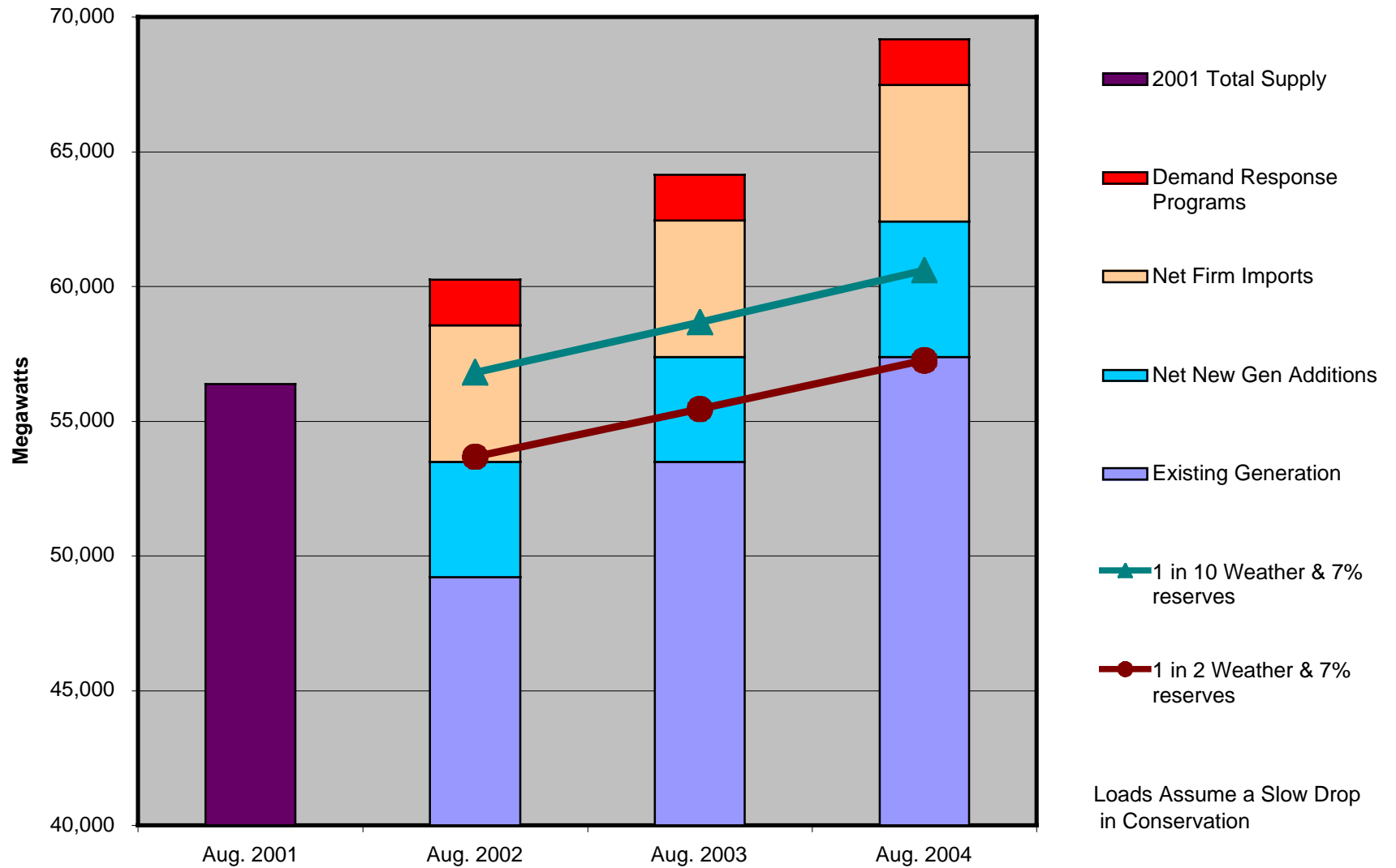


FIGURE 6
CALIFORNIA STATEWIDE SUPPLY DEMAND BALANCE 2002-2004
SUMMER CAPACITY - "High Demand" Scenario

